Chapter 5

Natural and Cultural Resources

CHAPTER 5: Natural and Cultural Resources

"Preserving the town's rural character" emerges time and time again as a high priority among Stow's residents, and is a priority that we cite often in this Master Plan. Although many different angles – ranging from housing density to traffic congestion to economic development – factor into the question of how we can preserve our rural character, the foundation of the discussion rests on the rural character itself: the town's natural landscapes and features, as well as the historic buildings and other sites that reflect the town's timeless appeal. This chapter attempts to inventory the various aspects of Stow's natural and cultural resources in order to give us a better sense of what we have, what we want to keep, what we risk losing, and how to use that information to meet our priorities.

Lundy Property

A. Vision for Natural and Cultural Resources

We envision a town that continues to place value on protecting our present natural resources, while working to expand and augment the arts and cultural opportunities within our community. Stow will continue to implement measures to preserve key land features and sensitive environmental areas. It will also explore new and innovative ways to support a variety of community-based cultural programming.

B. Natural Resources

The Pleistocene Glaciations formed the hummocky topography that is such a significant characteristic of Stow today. As can be seen from the above map, very little bedrock (orange and yellow areas) is exposed in Stow. The bedrock is buried under glacial deposits. Our soils, topography and drainage patterns were established when the glaciers finally receded – about 12,000 years ago in this area. Many of the high areas (including but not limited to Flagg Hill, Gardner Hill, Spindle Hill) are drumlins (dark blue on map). Drumlins are composed of relatively impermeable, unsorted glacial deposits known as tills. Other high areas (such as Marble Hill) are interpreted to be ground moraines (light blue areas), similar in composition to the drumlins, but deposited differently. The valleys in between are composed of better sorted,

more permeable “outwash” deposits. Outwash deposits form soils that are more tillable, and are the sources of our aquifers. Some of the outwash deposits date back to glacial origins (pink on map), while others at the surface are overprinted by modern surface processes (light and dark green on map). Notice that the “green” deposits are the products of today’s rivers and streams as they rework the landscape through which they flow.

Modern surface processes are often a combination of “natural” conditions (e.g., the seasonal ebb and flow of streams, weather patterns) combined with others that have a decidedly “human” component. Some of the latter include the dams on our rivers (e.g., the dams forming the Delaney Project, the Gleasondale mill area, and Lake Boon); changes associated with farming (clearing, cultivating, filling of wetlands); woodlot management; recreation modifications (golf courses, ball fields, trail clearing); and development (e.g., impervious pavement; site leveling, tree removal).

FIGURE: 13 Surficial Geologic Map of Stow

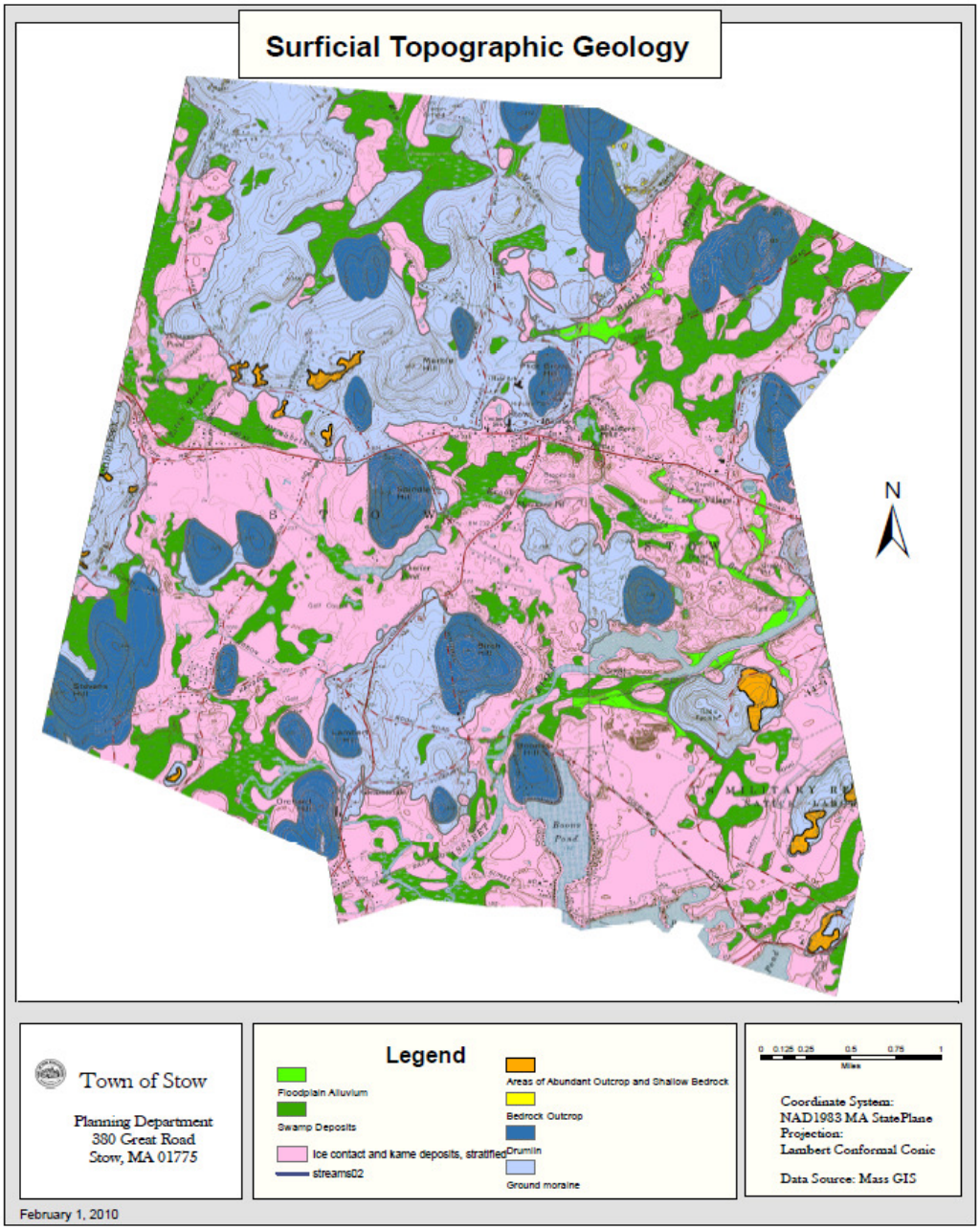
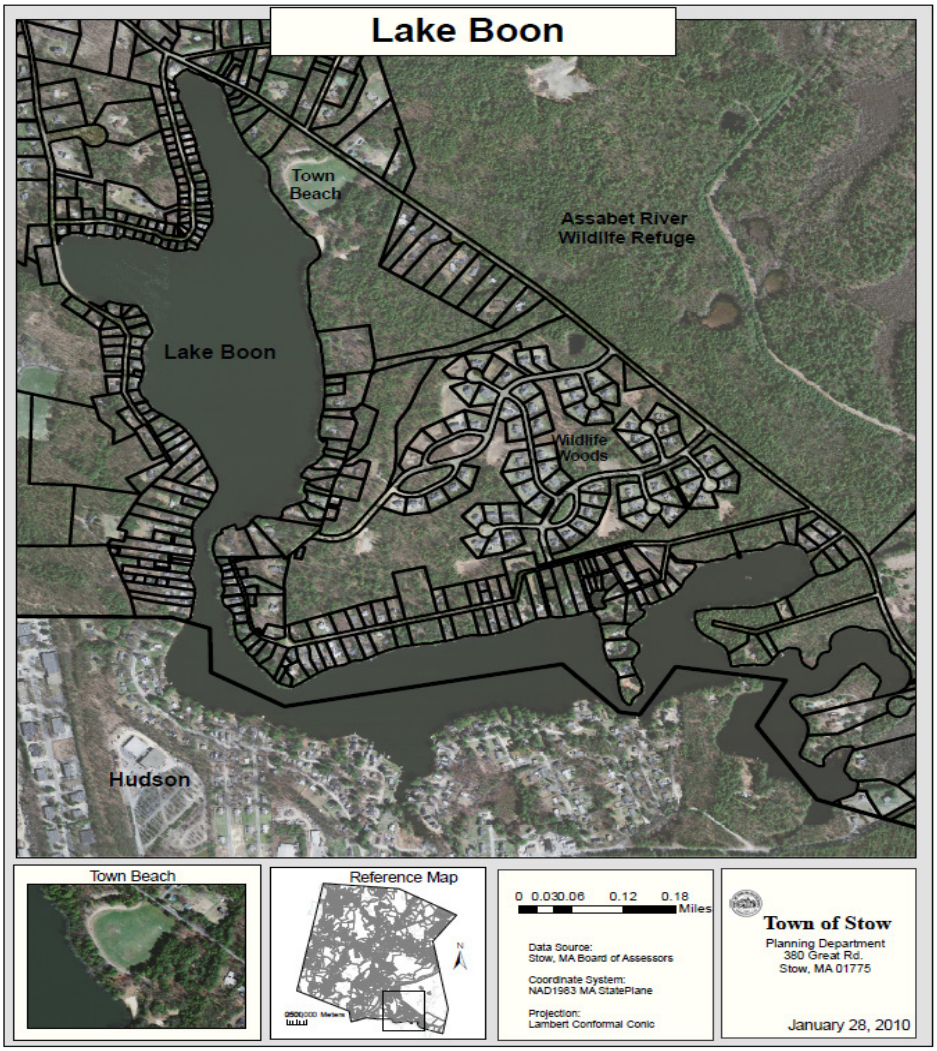


FIGURE: 14 Waters of Stow

Need to supply

Of the 17.62 square miles that comprise our town, approximately 2-3% is water. As can be seen on the map above, the open water is concentrated in our streams, brooks, lakes and the wetland associated with them. Stow lies completely within the SuAsCo Watershed, which is formed by the convergence of the Sudbury and Assabet Rivers into the Concord River. Stow relies on the SuAsCo system for many things: recreation (swimming, boating, fishing), agriculture, golf courses, and drinking water, to name a few examples.

FIGURE: 15 Lake Boon Map



One of Stow's major water resources is Lake Boon, a dammed-up tributary feeding the Assabet River. The lake is shared with the town of Hudson. Stow maintains recreational facilities on the lake (Pine Bluff beach and fields; boat ramp).

Lake Boon is unique. Its small lots, narrow dirt roads, tree-lined shores and shallow near-shore wells have a lot of character, and hark back to its days as a summer community. These same features make its transformation into a thriving year-round community somewhat problematic.

In particular:

- The small lots make compliance with the Board of Health septic-well regulations extremely challenging.
- As smaller cottages are updated, the impervious surfaces and runoff increase, further compromising the water quality (see next paragraph).

Another major concern with the Lake Boon area is the lake itself. It is an ecological fact that Lake Boon suffers from eutrophication, a condition in which, due to an excess of nitrogen and phosphorus, plant life in a water body grows excessively, taking up most of the dissolved oxygen, thereby killing other forms of life such as fish. The rate of decay and prognosis is debatable. If we as a town merely wait for this inevitability, we will severely restrict our options at that time. Many in town feel that we must make every effort to protect this asset, and support for this directive must be tested.

Two organizations in Stow are directly involved with the oversight of Lake Boon:

1. The **Lake Boon Association** (LBA) is a community based organization, supported by membership dues. On their website (www.lakeboon.org) they describe themselves as follows:

   "Lake Boon Association (LBA) – Incorporated in 1921 as the Lake Boon Improvement Association, Inc., it is currently known as The Lake Boon Association. Although its name has changed throughout the years, its Charter has always been to foster, maintain and improve the quality of the environmental and recreational aspects of Lake Boon.

   Mission Statement - It is the mission of the Lake Boon Association and the Lake Boon Commission to preserve, protect and enhance the environmental, aesthetic, recreational and economic value of Lake Boon, and to strive for a sensible balance between recreational activities and healthy wildlife habitats through in-lake and watershed management."

2. The **Lake Boon Commission** is a state-regulated board, administered by a board appointed by the selectmen in the towns of Hudson (1 member) and Stow (2 members). Their duties, as described on the LBA website, are as follow:

   "**Lake Boon Commission (LBC**) -- This unpaid commission is empowered to regulate recreational activities and the use of motorboats."

Joint responsibilities

The two work closely together to maintain and improve many aspects of the lake:

"**Activities** - Although originally founded to emphasize recreational activities, its emphasis has been modified to include the environment. Toward that end, there have been fundraising, recreational and educational activities. Fundraising and recreational activities to date have included: walkathons, raffles, dances, boat parades, water carnivals, music boat/lighting of the lake and flea markets. The educational activities have been directed toward understanding the nature of some of the problems and defining actions individual lake residents can take to minimize deterioration of lake quality." (www.lakeboon.org)

Educational programs supported by the groups include a **Lake Stewardship Program** that includes an information-rich website with "green" recommendations to encourage "lake-friendly" lifestyles. These include but are not limited to "green" household products, lawn care recommendations, a group-rate septic system maintenance (offered twice a year), storm water runoff and prevention information, and wildlife information.

A long-range plan to reverse the eutrophication of the lake provided funding for chemically treating the lake with an herbicide to kill off the yearly weeds. Several years of chemical treatment have reduced the weeds to a manageable level. The second phase of the project is to implement a yearly drawdown of the water level in the late fall until the exposed lake shore freezes; then the lake would be allowed to fill, pulling the ice (and weeds) up in the process. The method has promise, and has worked in other towns.

This phase of the project has run into some obstacles:

- A large number of Lake Boon residents have shallow wells that may be adversely affected if the water table falls too much. A 40-inch drawdown may be too much. A concrete plan to deal with wells going dry needs to be in place before the drawdown begins. So far, there is no plan. The Lake Boon Commission, the Conservation Commission, Board of Health, and the MASS DEP (Department of Environmental Protection) are working on a solution that will help keep the weeds in the lake under control, while ensuring that the water supply to the neighborhoods is not compromised.

- As houses in the Lake Boon area get renovated, shallow wells often get replaced with deep wells. An accurate record of how many shallow wells still exist has not been easy to compile. A contingency plan is hard to design without this information.

- A contingency plan costs money. So far, nobody has come up with funding. At its spring 2009 meeting, the LBA generously voted $10,000 toward the project.

Our waterways are only one natural resource contributing to Stow's rural character. The town-held conservation lands (Annie Moore Land, Captain Sargent Farm Land, parts of Flagg Hill, Gardner Hill /Town Forest, Heath Hen Meadow Brook Woodland, Marble Hill, parts of Spindle Hill) provide a network of trails, many of which are close enough to each other to bring the "Emerald Necklace" tantalizingly close to reality. The trails in the network are in woods, open fields, and wetland areas, and allow residents to enjoy the woods and wetlands in the town. Many groups in town (Stow Conservation Trust, Boy Scouts, Girl Scouts) as well as individuals use the conservation lands regularly.

Protecting our natural resources is an area of ongoing concern and is addressed continuously by various groups in town. Some of these are town-appointed (including the Conservation Commission and the Lake Boon Commission), while others are not (Stow Conservation Trust, Lake Boon Association). It will be important for municipal leaders to work collaboratively and cooperatively with the independent groups to ensure an atmosphere that yields consensus and directs civic energy to address problems as they arise. Looking forward, there will be an ever-growing need for mandates and regulations to help us protect natural resources.

C. Cultural Resources

Cultural resources can be as simple as community get-togethers or as carefully planned as outdoor concert series or community theaters. Activities sponsored by the library, the Recreation Department, the Council on Aging, the public schools, and other organizations all fall under the category of cultural resources. In a less tangible way, our town's strong sense of community can be counted as a cultural resource as well. This sense of community flows from many of the elements described in earlier sections and includes the following:

- Our community pride in open space and the outdoors, including our farms, orchards, golf courses, conservation land, Lake Boon, and the hills of Stow (Pilot Grove, Marble, Gardner, Flagg, Spindle)

- The visual connection of the library, the Town Common, the Fire House, Town Hall and the Town Building and the Assabet River flowing past the Gleasondale Mill and near the clustered residences of Gleasondale connote a sense of community that dates to the 1800s

- Lake Boon and its clustered residences along the shore with the nearby beach (Pine Bluff Recreation Area)

- Our respect for our town's history, including our Minutemen, colonial homesteads, burial grounds, and our agricultural heritage ties us directly to the establishment of Stow's incorporation in 1683

- Our people, who gather together in churches, at schools, for bloodmobiles, during recreation, participating in town government, and more

The Stow Cultural Council (SCC) is a group of residents appointed by the Board of Selectmen to dispense public funding to support community-based projects and activities in the arts, humanities, and interpretive sciences to benefit the residents of Stow. These funds come from money allocated to the SCC by the Massachusetts Cultural Council, as well as other funds that may come from the town, foundations, or private donations.

The SCC defines its mission as follows: "to create a closer-knit community in Stow by sponsoring and supporting activities and events that bring the diverse elements of our community together for enjoyment and cultural enrichment."

For the last fiscal year, the SCC approved $6,765 to support a wide variety of programs. Not all of the programs occur in Stow, but the appeal is widespread and draws in residents and visitors alike. Following are some examples:

- The Lake Boon Water Carnival Music Boat
- The Stow West School Open Houses
- The Hale Middle School Play
- Decorating the light control boxes by the library
- Stow video contest
- The Sounds of Stow Concert Season
- Symphony Pro Musica
- The American Boys Choir
- Stow Garden Tour
- Charlie Chaplin Movie Night
- Three Apples Story Telling Festival
- The Rivers Edge Community Concert
- The Exhibition of Arts and Crafts at the Fitchburg Art Museum
- The Community Arts Festival at Center School
- Jeff Bernhardt Performances at Pompo, Center, and Town Hall
- The Randall Library Summer Reading Program
- The Discovery Museum Stow Day
- Clarence Darrow Performance
- Senior Musical: Best loved songs of the early 20th century with John Root

Numerous other yearly traditions enhance cultural life in Stow as well. The following are annual events funded by a combination of town monies and private donations.

- SpringFest weekend
- FireFighters Association Family Day and "Wash a Fire Truck" Day

- Sounds of Stow Concerts

D. Historic Elements

Much of Stow's character reflects traces of its beginnings over 300 years ago, through its historic buildings, its monuments, and even the layout of the Town Center. We are obligated as a community to support the preservation of this character, working both through organized groups and through stewardship or ownership of historic structures.

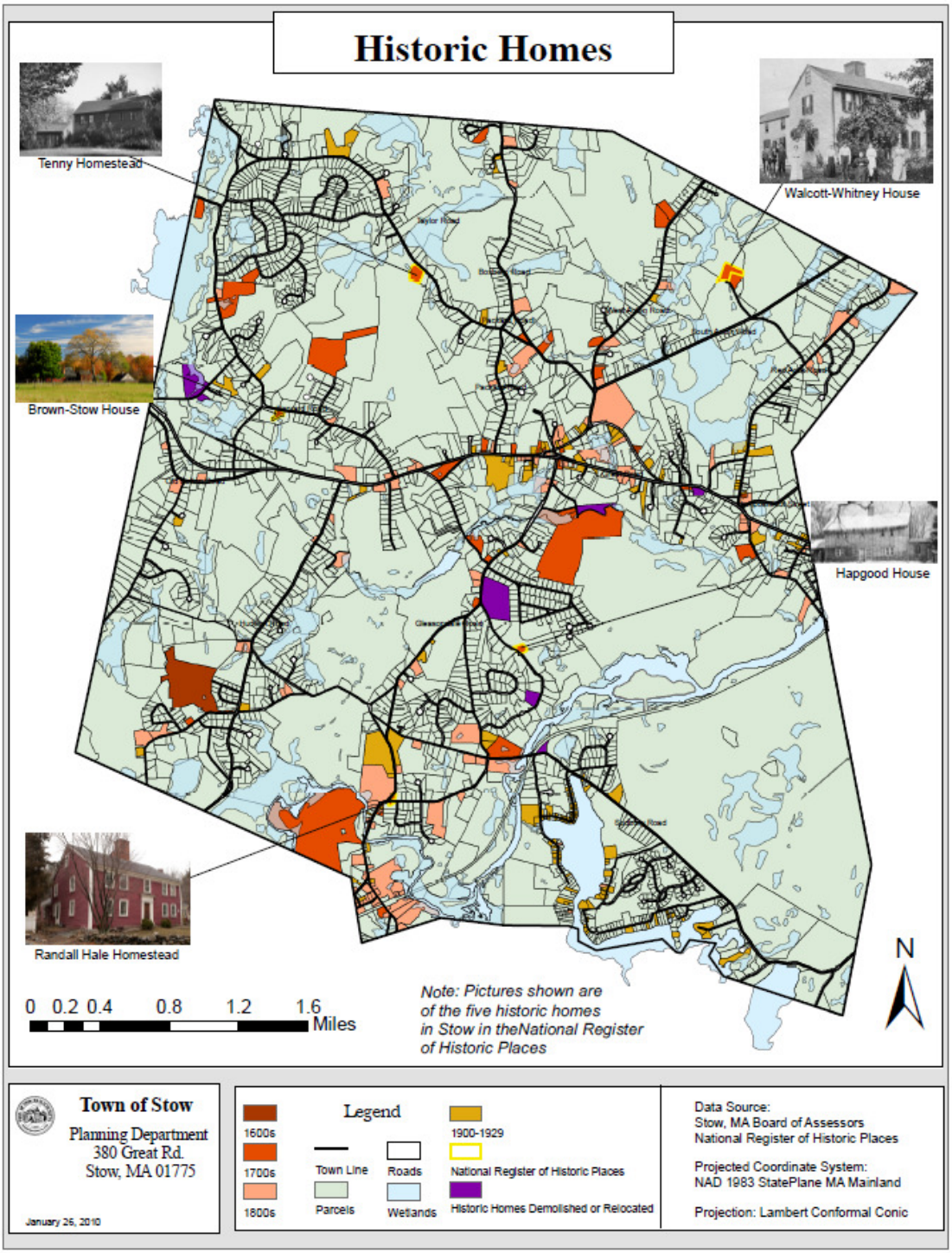
Stow has a wealth of early dwellings and structures listed in a Massachusetts Historical Commission inventory prepared back in the 1980s. At Town Meeting in 2009, a vote was taken to enable this inventory to be updated over the next three years. The Master Plan Committee suggests that not only should this inventory be updated, but during this process consideration should be given to how the town might aid in preserving those buildings which are homes, barns, garages, and other structures.

The 1982 inventory lists the following data:

- From 1600-1700 there are 4 buildings.
- From 1700-1800 there are 31 buildings.
- From 1800-1900 there are 132 buildings.
- From 1900-1930 there are 115 buildings, with some but not all of them located around Lake Boon. Interestingly, there is a windmill from 1889 listed.
- The Gleasondale Mill is dated 1854. Information about "Rockbottom," as Gleasondale was known, provides an interesting history of the workings of a mill village.

One can see from the below map that these various historic structures are scattered around town but also clustered in certain key areas closest to the civic center of the community.

FIGURE: 16 Historic Structures Map



As of 2009, we currently know of approximately ten early buildings that have been demolished in recent years along with one that was dismantled and moved to Connecticut.

Options to consider if we want to further protect our historic buildings include the following:

- Adopt a Historical District
- Help to registering properties on the State or Federal historic inventory
- Implement demolition delay bylaws
- Provide other incentives to assist property owners in maintaining these properties

The last efforts to establish historic districts in town, undertaken in the early 1990's were met with great resistance by the community. The more recent Master Plan Survey seems to suggest a different trend, reflecting that 69% of the respondents support the creation of a historic district within the Center.

Nonetheless, the size of a district and nature of the proposed restrictions and regulations play a large part in determining if residents will find these protections valuable or onerous. When the town undertakes its update of the historic properties inventory, the Master Plan Committee strongly suggests that opportunities for protecting these valuable resources in the town be explored and further public input sought. As land prices continue to increase in the future, and as buildable land becomes more scarce, it is typical for communities to see more and more occasions where older structures are torn down to make way for new development. Wholesale loss of community character can occur if this pressure is allowed to proceed unchecked. Bylaws or regulations pertaining to what can be built on properties where a structure has been removed can help to introduce a disincentive to tearing down older homes and barns. This should also be explored as a means to help preserve the historical resources in the community.

1. Town Center

Our current Town Center is of colonial design, and it houses our historical Town Hall (built in 1847-49), our Town Building with municipal offices, our library, churches, police and fire departments and schools along with a small convenience store. The Town Center also features a prominent Town Common at the intersection of routes 117 and 62. It has a few valuable monuments and proximity to the Stow cemetery. A mix of housing on small lots creates a small neighborhood that is pedestrian-friendly,

and sidewalks let people more easily access the services offered in this area. These elements, together with a scarcity of commercial enterprise, combine to convey a sense of old New England at the hub of the town.

In 1992, the Stow Historic District Study Committee (SHDSC) proposed the formation of Local Historic Districts as provided in MGL Chapter 40C. The SHDSC determined that the two most likely districts would be in Gleasondale and in Stow Center. Although residents recognized the need for historic preservation and the fact that a local historic district often leads to increased property values, they said that they did not want to be subject to another layer of regulation. As indicated in the Historic Homes Map of Stow, existing historic homes are located throughout town rather than one localized area, making it difficult to determine a localized area for a Historic District. The town is in the process of updating the historic properties inventory. Once this inventory is completed, the Master Plan Committee strongly suggests that the town seek further public input on opportunities (such as adoption of a Historic District, a Conservancy Overlay District, Demolition Delay Bylaw, and encouragement of property owners to register properties in the Mass Historic Inventory) for protecting historic structures in the town and on ways to protect them.

2. Buildings

In 1849, the present brick mill in Gleasondale, constructed when the original wooden structure burned, was built in the Greek Revival style. From the mid-1800s to the end of World War II, the Gleasondale Mill housed the fourth oldest woolen mill in the United States. At the end of World War II, the mill was converted to burlap manufacturing, and in 1966, it was converted to its present use as the Gleasondale Industrial Park. In the 1800s, houses for workers were built near the Gleasondale Mill, and many of these houses still exist along Gleasondale Road. The predominant architectural style of the village is Federal, but there are fine examples of Colonial, Greek Revival, Victorian and Italianate architecture within the village.

3. Historic homes

Standing houses in Stow range from the late 1600s to the present. Many substantial houses were built in the early 1800s. These historic buildings are fundamental to Stow's identity. The survival of these historic resources today is neither accidental nor a guarantee for their future. In 1989, Stow lost a 1775 Federal-style dwelling, located at 194 Great Road (Route 117), adjacent to the current Stow House of Pizza, when the structure was disassembled and moved out of state.

When the post office relocated to the Lower Village, there was an attempt to save an 1875 Greek Revival dwelling, which was temporarily relocated to the same lot. Unfortunately, due to

zoning restrictions, the owner was unable to find an economically feasible use. In 2003, the house was demolished. Stow should explore zoning opportunities that might make it easier to save these structures.[aa]

An 1859 Italianate-style house, known as the "Faxon House" and located at 189 Great Road, stands on a site that has been developed as a senior living development. The Planning Board, in its permitting process, successfully negotiated a plan that preserved the Faxon House as part of the design of the development. This was an excellent example of collaboration to preserve an historic property with development and redevelopment. It might be possible, in the future, to augment existing regulations to make such collaboration more of a requirement rather than a negotiated process. This should be explored in the future as an improvement to local permitting regulations.

Other historic homes the town has recently lost include the following:

- Carbury house, Great Road: dismantled and moved out of state
- Eaton house, Great Road: demolished
- Vogel house, Sudbury Road: demolished
- Weathers house, Sudbury Road: demolished
- Kelley house, Treaty Elm Lane: demolished
- Stephenson house, Gleasondale Road: demolished
- Noonan house, Hudson Road: demolished
- Fletcher Box Mill: demolished
- Hop House: demolished
- Zanders Cider Mill, Delaney Street: significantly altered

FIGURE: 17 Antique home photos

Still existing today are some of Stow's most noteworthy historic homes:

E. Heritage Landscapes

It is increasingly common in municipal planning discussions to refer to "heritage landscapes," loosely defined as the places we picture with a sense of pride and comfort when we run our mind's eye over our hometown. If you took a trip to the other end of the world and felt homesick, what are some of the landscapes and vistas you would be picturing as you thought about the concept of home? Put another way, if you had to take a photo to put on a calendar to represent Stow, what would you photograph? Featured might be a particular apple orchard, a stretch of road, an old barn or farmhouse, or a certain view of the Town Center. These are all examples of vistas we should attempt to protect in the name of preserving our heritage landscapes.

Stow conducted its own Heritage Landscapes project in 2006 in conjunction with the Department of Conservation and Recreation (which provided funding) and Freedom's Way Heritage Association[13], a consortium of 37 Massachusetts communities actively engaged in preserving certain aspects of the community for historical or aesthetic reasons (as opposed to, for example, environmental or diversity reasons). That project gathered more than 20 townspeople representing town boards, nonprofits, and private interests to identify what they considered to be heritage landscapes. The group then narrowed its list down to five designated "priority heritage landscapes," identified as the Assabet River, the Blacksmith Shop, Gleasondale, Lower Village, and Lake Boon/Cottage Neighborhoods.

The committee drew up specific recommendations for the future of each of the priority areas, which can be summarized as follows (for more details, see the Stow Reconnaissance Report [list in Appendix]. The Master Plan Committee agrees that these recommendations are all worthy of pursuit by the Historical Commission once the historical homes inventory is done.

1. Assabet River

Recommendations from the Heritage Landscapes project:

- Obtain community representation on the OAR Board and work with them as well as regional organizations such as the SuAsCo Watershed Association in efforts to preserve the river and marshland
- Work in conjunction with the town of Hudson to resolve issues surrounding the ARRT
- Document historic resources along the river, particularly the crossings, Gleasondale and Crow Island

2. Blacksmith Shop

Recommendations from the Heritage Landscapes project:

- Prepare a Massachusetts Historical Commission (MHC) Form B
- Consider additional documentation by an historic structures report
- Measure, photograph and stabilize building
- Develop a reuse and preservation plan
- Consider town needs for various types of space
- List in the National Register to make the blacksmith shop potentially eligible for Massachusetts Preservation Projects Fund (MPPF)
- Contact the MHC to learn of MPPF status when ready to pursue rehabilitation of the shop

[13] Freedom's Way Heritage Association has recently obtained National Heritage Area designation by Congress. For more information on Freedom's Way, go to: http://www.freedomsway.org/

The MPC recommends that the town explore feasible and cost-effective options for relocating the Blacksmith Shop to accommodate Center School construction.

3. Gleasondale

Recommendations from the Heritage Landscapes project:

- Document the Gleasondale heritage landscape on an MHC Area Form
- Evaluate for appropriate National Register boundaries and prepare National Register nomination
- Pursue local historic district designation for this well preserved village
- Seek input on tax advantages that could be used to rehabilitate and reuse mill complex, and work with the sellers to promote these advantages to prospective buyers

4. Lower Village

Recommendations from the Heritage Landscapes project:

- Document the Lower Village heritage landscape on an MHC Area Form and update 1980s individual property forms
- Evaluate for appropriate National Register boundaries and prepare National Register nomination, particularly for the area near White Pond Road, Red Acre Road, Pompositticut Street and Route 117 including historic houses, the cemetery and the Common
- Work with the Planning Board to study and develop a village center bylaw that develops a pedestrian streetscape by placing buildings close to the road consistent with extant historic buildings and locating parking behind or screened from view
- Consider neighborhood architectural conservation district designation in order to address size, scale and materials of new construction and additions, consistent with extant historic resources

5. Lake Boon and Cottage Neighborhoods

Recommendations from the Heritage Landscapes project:

- Document the Lake Boon neighborhood on an MHC Area Form and individual forms for certain cottages, the dam and town beach
- Develop a preservation plan considering neighborhood architectural conservation district designation
- Encourage the Planning Board to consider limiting development of large dwellings on the lake shore
- Consider potential use of special permit process particularly in the event that an existing cottage is demolished to build a new house

F. Preserving and Enhancing Natural Land Features

The priority goals for natural resource and open space protection have been identified by other town committees and in published reports such as the Community Development Plan as the following:

- Protect more open space (open space will be discussed further in the next chapter)
- Implement wildlife corridor and linkages of open space with trails
- Protect the existing character consisting of stone walls, trees, etc, including preserving and replacing shade trees
- Protect groundwater quality, with an emphasis on addressing septic system failures

Many of the priorities expressed by residents relating to open space appear oriented toward protection of the natural resources and community character of Stow rather than toward provision of additional recreational uses. Two exceptions to this are the goal of completion of acquisition for the inter-municipal multiple use Assabet River Rail Trail and the acquisition of land along the river. According to those participating in the Community Development Plan (EO418) forum, Crow Island/Track Road's high score in prioritization is related to the potential use of this site for active recreational uses (such as soccer fields and the rail trail connection) in addition to its natural resource characteristics. Funding for various section of Track Road has been provided by the Community Preservation Act and portions of that ROW have already been acquired. Completing the acquisition of the entire ROW needed for the trail must remain a high community priority.

Three immediate opportunities for preserving and enhancing our natural resources are the Emerald Necklace trail network, the Assabet River Rail Trail and Lake Boon. Regarding these areas, the MPC recommends adopting the recommendations from the 2006 Stow Reconnaissance Report.

1. Emerald Necklace

In the next five years, we need to continue work toward completing the Emerald Necklace walking trail of conservation land throughout the town of Stow. The Stow Conservation Trust (SCT) has led the drive for the creation of this walking trail. Once a year, a hardy group of residents and friends walk this trail, which currently extends about ten miles through Stow. While there are gaps in this trail, the SCT and the Conservation Commission are working together to join all the pieces together.

2. Assabet River Rail Trail

The Assabet River Rail Trail, once a vision, is now a reality in adjoining communities. Stow is the missing link. We need to identify the financial issues, the concerns of current landowners,

and the possibilities for action to complete the rail trail in Stow and connect to the pieces in our neighboring towns. We must make proposals that alleviate concerns and explore all options, including incentives for property owners, so as to make this opportunity a reality in Stow. Recently the town concluded a successful purchase of the remaining right-of-way on Track Road, which connects with Maynard and runs to Sudbury Road in Stow by the Sudbury Road bridge. It is from here to Hudson that the establishment of a trail needs work. Once the trail is connected to Hudson, Stow residents will be able to easily enjoy the existing 5.5 miles of trail that run through that community and into downtown Marlborough. (See Chapter 8 for more information on the Rail Trail.)

3. Lake Boon

As discussed earlier in this chapter and elsewhere in this Master Plan, the eutrophication of Lake Boon is an ongoing problem that will not improve with time. Spatial limitations for wells and septic systems are not going to change. The eutrophication problem is ongoing. The chemical treatments for the weeds have made a difference, but are a short-term fix. They have, however, postponed the necessity for action by slowing the weed growth until decisions about the next step can be made. The drawdown proposal has merits, but there are some problems with it that have to be worked out. In either case, a decision will have to be made soon, if the lake is not to revert to its previous state. This would, over time, turn more and more of the lake into a wetland area instead of a body of water. The MPC recommends that the town support ongoing action to prevent this from happening.

Many in town feel that we must make every effort to protect this asset, but the full measure of support for this directive is yet to be ascertained. Relevant Town Meeting votes, committee and board policies, and other municipal actions going forward will help the community evaluate the level of willingness the community has to take action. In order to help guide that process, various stakeholders should work towards developing a scope which depicts a vision of what recovery means, what it will look like, and what it will cost. Broad consensus will need to be achieved on that vision. Once the vision is developed, individual problem areas can be detailed and studied. Diverse committee participation and especially the assistance and leadership of the Lake Boon Association, should be sought in developing solutions to this critical problem. Then, a thoughtful implementation plan and schedule could potentially be rolled out which will depict how the community will address the identified problems in order to improve the lake and help it meet the desired vision. Measures such as a Betterment Fee or other funding mechanisms will need to be explored to enable the Town to implement the preferred approach. When the problem analysis is being conducted, special attention should be given to the areas outlined below.

1. Weeds

For years now, it has been recognized that the weed problem in Lake Boon has not been resolved. The basins are becoming filled with vegetative growth. The density of population around the lake both in Stow and in Hudson is overwhelming the land and its ability to keep the

lake environment both clean and safe for use. The prognosis for this area is poor, and efforts need to be taken now to prevent further degradation.

2. Fertilizers

We need to educate the residents of lake properties that using fertilizer on their lawns feeds the weeds and perpetuates their spread. The use of fertilizers must be prohibited near the lake, whether through a buffer zone or outright prohibition. Fertilizers are non-point source pollutions that come from a variety of sources is one of the biggest offenders in the lake pollution.

3. Septic failures

Existing cesspools and failing septic systems exacerbate the weed problem. Before 1940, Lake Boon was a summer colony with small cottages and cesspools that had two months of use. For the rest of the year, the lake area "rested." Today large year-round houses on small lots have replaced many of the small cottages, and septic systems on these lots are being stressed from heavy usage. Some failed systems have been replaced, but providing "maximum feasible upgrades" only postpones the inevitable. In the future, lake residents will saturate the ground and its water sources with waste that has nowhere else to go.

Town officials and residents must work together to create a plan to save this valuable resource for future generations. Years ago, the selectmen sponsored an engineering study to explore alternatives to sewers for lake residences. The study proposed a three-phase implementation that included the Hudson side of Lake Boon in the third phase. The study was never implemented. Meanwhile, aging and failed septic systems continue to adversely affect the lake.

4. Assabet River

There is no question that Stow's charm and the health of the Assabet River are intertwined. The Assabet River is a major component of the SuAsCo Watershed, running "free" through Stow from the dam at Gleasondale to the Ben Smith Dam in Maynard. The Massachusetts Department of Environmental Protection (DEP) is responsible for monitoring its waters to ensure that they are in compliance with the Massachusetts Water Quality Standards (MWQS) (314 CMR 4.0). The DEP ascertained that the Assabet does not comply, and issued a report (2004) entitled "Assabet River Total Maximum Daily Load (TMDL) for Phosphorus"[14] as part of its "pollution budget," designed to restore the health of the river. More recently, the Army Corps of Engineers released its 2009 draft of "Assabet River, Massachusetts Sediment and Dam Removal Feasibility Study." This report explores the cost, process and end results of dredging, limiting winter discharge levels of phosphorus and removing the dams from the Assabet River as measures to bring the river into compliance with the law.

[14] Report Number MA82B-01-2004-01; Control Number CN 2010; available from the DEP, or online at: http//www.state.ma.us/dep/brp/wm/tmdls.htm

The 2004 report describes the Assabet as an "effluent dominated, impounded river," as it has nine dams, four major publicly owned treatment works (POTW) and three minor ones along its length from Westborough to Concord. Stow is the only town on the river that does not have a POTW discharging into the river. The Assabet fails to comply with the MWQS on the following counts: the phosphorus content and organic enrichment are too high, while the dissolved oxygen is too low. Together, these mean that the river is eutrophied.

Phosphorus, dissolved oxygen levels and organic enrichment are not unrelated. Phosphorus is a major contributor to excessive plant growth which results in organic enrichment, which, when the bloom dies, it decays, depleting the dissolved oxygen in the system. Phosphorus comes in two forms: Ortho-phosphorus is dissolved in the water column and is readily available to plants. The second form, "particulate" phosphorus, settles into the sediment, and is not readily available to plants. The sediments are trapped primarily behind the dams. The cycle continues: as the ortho-phosphorus is removed from the water (it is either taken up by plants, or flows out of the system downstream), excess particulate phosphorus dissolves into the water column, where it becomes available to plants. As long as there is any phosphorus in the system, plants can use it. The conventional thinking was that phosphorus discharge in the growing season (April to October) was much more of a concern than during the winter (November to March).

The DEP has identified the sources of the excessive phosphorus. The sources get split into "point source" and "non-point source" categories. The point source pollution sites are the POTWs. The POTWs discharge both forms of phosphorus. The report includes a study that looked at how much of the phosphorus comes from point sources vs. non-point sources. The point sources were found to contribute 82 - 97% of the total phosphorus in all conditions except for rare very wet, high water conditions, when the non-point sources are major contributors. The Elizabeth Brook (at the Maynard end) is listed in the report as a non-point source. Under high water and wet conditions, it carries an extremely high phosphorus load.[15]

Stow was not included in the preliminary talks, or the first draft report but did submit comments at the appropriate time. Many of Stow's concerns were addressed in the revised 2009 report. In addition, Stow has been allowed to join the *Assabet River Study Coordination Team*, but only as non-voting members. Appointed representatives have attended the meetings held between the two reports.

The 2009 Feasibility Study (released in November 2009) cites that the non-growing season phosphorus discharges are not as benign as formerly thought. In fact, they are significant contributors to the sediment phosphorus. The study discusses the prospects of using combined methods to reduce the overall phosphorus budget for the river. These include dredging, dam removal, and limiting the non-growing season phosphorus discharge levels to those required for growing season levels. Dredging on its own is considered to be a short-term, nonpermanent fix, unless the overall point source phosphorus discharge levels are drastically reduced year round. Growing season reduction levels of discharge, combined with the removal of all the dams, and

[15] Ibid. Page 21 0f 104

dredging would bring the river closer to its goal of 90% reduction in sediment-bound phosphorus, but still will not get it there. The study discusses each dam individually, as the project would be staged. Removing the Ben Smith Dam would have the largest benefit because it impounds the longest reach of river, so has collected the most phosphorus-rich sediment.

The report also points out that the Ben Smith Dam:

- Is part of an historic district eligible for the National Register of Historic Places
- Has profound effects on the upstream wetlands
- Would be the most expensive to remove (estimated at $13 million)
- Removing it has the blessing of the US Fish and Wildlife Service as part of its project to restore former migratory corridors in the SuAsCo Watershed

Obviously, the removal of the dams would drastically change Stow's section of the Assabet. The excess phosphorus is a problem, but as the reports state, the source of the phosphorus is overwhelmingly from the POTWs. Several related papers and reports have been released[16] in the last few years. These should be carefully read. It is important to note that nothing definitive has been decided about the dam removal.

When the 2009 Army Corps report was released (November 2009) the Board of Selectmen held a public meeting that included representatives from the Corps and the firm that did the study. Comments from Stow citizens,and from Stow's boards were collected. On November 19, 2009, Mass DEP and the Army Corps of Engineers held a meeting in Stow to get citizen feedback about the newly released study. Both events were well attended, and the overwhelming consensus of those present was that the dams should not be removed.

Comments from Stow residents and comments from the Stow boards were collected and compiled into a letter strongly opposing dam removal. The letter was sent to the Mass DEP, state and federal representatives and the Army Corps of Engineers during the period open to public comment.

G. Action Items

- Continue efforts to procure funds and work collaboratively with SCT and other groups to complete the Emerald Necklace trail

[16] Assabet River, Massachusetts Sediment and Dam Removal Feasibility Study; Army Corps of Engineers 2009.
Assabet River Sediment and Dam Removal Study Modeling Report, prepared for the Army Corps of Engineers, 2008

- Continue procuring parcels and working with property owners to establish contiguous access as a right-of-way to the Rail Trail

- Actively pursue improvements to Lake Boon problems by educating residents as to environmental use of fertilizers, septics, wells, etc.

- Restrict new building permits

- Discourage teardowns

- Limit square footage of new development to protect against overbuilding

- Pursue zoning and bylaw changes to limit development on the lake

- Find ways to preserve existing structures

- Stay engaged in ongoing discussions and studies such as the *Assabet River Study Coordination Team* and maintain an active role in any future studies initiated

- Identify sources and develop strategies to mitigate excess of phosphorus in Elizabeth Brook during high-water, wet weather conditions

- Encourage the DEP to fund follow-up studies of non-growing season phosphorus discharge and its role in the overall nutrient budget of the river

- Explore protection of the Town Center through possibilities such as a historic district, conservancy overlay district, demolition delay bylaw, Mass historic inventory

- Explore protection of historic homes and buildings through possibilities such as a historic inventory; zoning/bylaw changes to discourage teardowns; restrict rebuilds

- Explore improvements to the Lower Village including a village-friendly bylaw; inclusion in the National Register